LINOS

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Lenses for Analog Professional Photography

Even in the age of digital photography, the professional camera remains the dominant tool for advertising, still-life and architectural photographs. The large formats of conventional photography still offer unsurpassed sharpness and an incomparable abundance of detail. Professional cameras allow perspective corrections and deliberate inclinations of the plane of best sharpness ("Scheimpflug plane") which is not possible with nonadjustable cameras or – when using shift or perspective control lenses – only with great restrictions.

Rodenstock's range of lenses for professional photography therefore includes different lens types which are available in graduated focal lengths to meet practical requirements.

- The standard lens for conventional professional photography should provide a medium to large image angle, high speed and best image quality. These demands are met by the Apo-Sironar available in the two versions "N" and "S". As a standard lens, it is used with a focal length which roughly corresponds to the diagonal of the format.

- For large image scales from around 1:5 to 2:1, there is the special close-up lens Apo-Macro-Sironar. It is characterized by excellent definition in this scale range as well as by high speed and a wide image circle.

- Whenever small rooms, wide spaces or short taking distances (architecture) make large field angles necessary, the wide-angle lenses of first choice are the Apo-Grandagon and the Grandagon-N with field angles of up to 120°.

- When the large movement range of the ultra-wide angle lenses Apo-Grandagon and Grandagon-N is utilized, the physically unavoidable fall-off in illumination to the margin of the image circle can generally be reduced by a Rodenstock center filter which is available in the same high quality as our lenses and with vignetting-free mounts.

- In order to be able to use our high-performance lenses with cameras without bellows like panoramic or shift cameras, we developed our non-rotating focusing device "Focus-Mount". It is available with distance scales precisely matched to any focal length of all Rodenstock lenses in shutter size 0.

The prefix "Apo" stands for the best possible correction of chromatic aberration and guarantees crisp and brilliant photos without color fringes

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Lenses for Analog Professional Photography

Apo-Sironar-N

The Apo-Sironar-N is the all-round lens for the professional photographer. Typical applications are product shots of every kind, industrial subjects, landscape and city photography.

The Apo-Sironar-N equally provides an ideal longer focus lens with smaller formats. Monorail view cameras permit almost unlimited extension (especially with extension bellows). As a result optically problematic tele lens designs whose Barlow group tends to produce color fringes are no longer needed; their short back focal length only provides advantages for cameras without a bollows for focusing.

The six-element Apo-Sironar-N bears the “Apo” designation without restriction despite its very advantageous price. The field angle is 72°. The image circle diameter exceeds the diagonal of the recommended format by around 45 %; this gives the photographer considerable edge quality together with abundant shift and swing or tilt possibilities.

Apo-Sironar-N	Max. recommended film format
150 mm f/5.6	9×12 cm / 4×5 in.
210 mm f/5.6	13×18 cm / 5×7 in.

Data sheets

Formats, dimensions, shutter data, image circles, movement ranges

Performance data

Apo-Sironar-N: world famous as the photographer's powerfull “work horse”

Apo-Sironar-N

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Formats, shutter sizes, dimensions, weight

Lens	Max. recommended film format	Shutter size	Push-on mount Ø	Filter thread	Rear barrel Ø	Flange focal length [1]	Overall length	Weight w/Copal
150 mm f/5.6	9×12 cm / 4×5 in.	0	51 mm	M 49 × 0.75	42.0 mm	142.0 mm	51.0 mm	220 g
210 mm f/5.6	13×18 cm / 5×7 in.	1	70 mm	M 67 × 0.75	60.0 mm	200.0 mm	66.0 mm	440 g

[1]) With Copal shutter for scale 1:∞

Shutter data

Shutter type and size	Shutter speeds range	Manual cocking	Self cocking	Mechanical	Electronic	x-synchronized	Smallest f-stop increments	Screw thread	Lens board opening	Lens board thickness	Accessories required
Copal 0	B, T, 1/500 s … 1 s	•		•		•		M 32.5 × 0.5	34.8 mm	1.5 … 4.0 mm	
Copal 1	B, T, 1/400 s … 1 s	•		•		•		M 39 × 0.75	41.8 mm	1.5 … 3.0 mm	
Copal Press 0	B, 1/125 s … 1 s		•	•		•		M 32.5 × 0.5	34.8 mm	1.5 … 3.0 mm	
Copal Press 1	B, 1/125 s … 1 s		•	•		•		M 39 × 0.75	41.8 mm	1.5 … 2.0 mm	
Rollei Electron. 0	B, 1/500 s … 30 s				•	•	1/10	M 39 × 0.75	41.8 mm	1.5 … 3.0 mm	Control Unit
Rollei Electron. 1	B, 1/300 s … 30 s				•	•	1/10	M 39 × 0.75	41.8 mm	1.5 … 3.0 mm	Control Unit

Working apertures, image angles, image circles and movement ranges

Lens	Image scale	Working f-stop	Image angle	Image circle diameter	Movement range [mm] [2]) vertical/horizontal (landscape format) 6×7 cm	6×9 cm	6×12 cm	4×5 in.	5×7 in.	8×10 in.
150 mm f/5.6	1:∞	16-22	75°	231 mm	73 / 69	69 / 59	63 / 46	40 / 36	4 / 3	
210 mm f/5.6	1:∞	22-32	75°	316 mm	119 / 114	116 / 104	111 / 91	90 / 83	64 / 53	

[2]) These values apply to the recommended working aperture at the given scale; with increasing scale, image circle and movement ranges increase

Apo-Sironar-N 150 mm f/5.6

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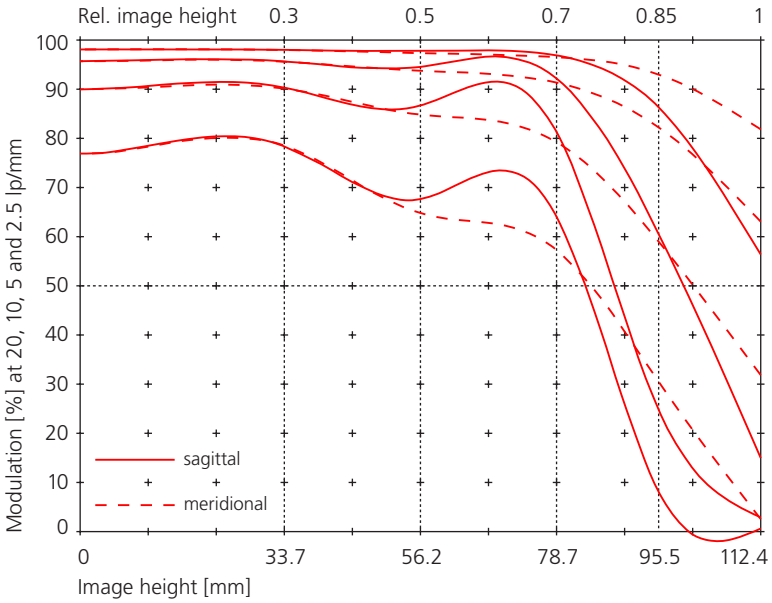
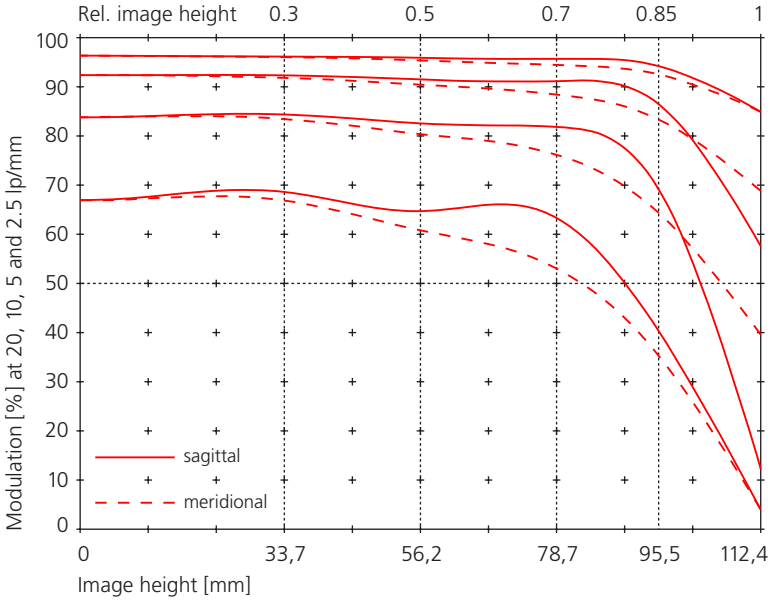
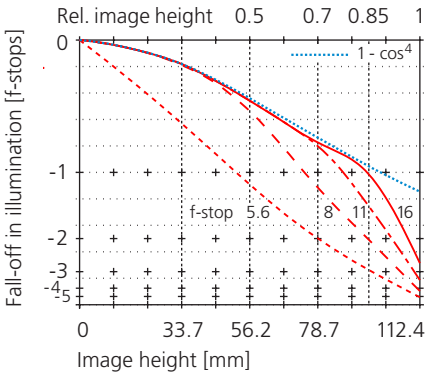
Modulation transfer function Scale 0.05x f-stop 11



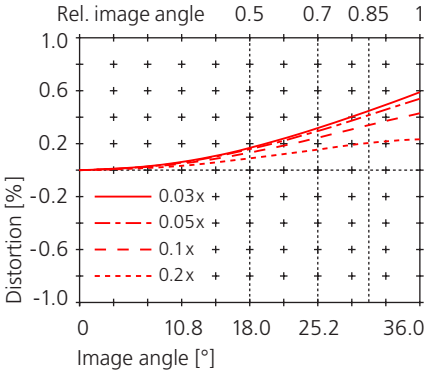
Modulation transfer function Scale 0.05x f-stop 22



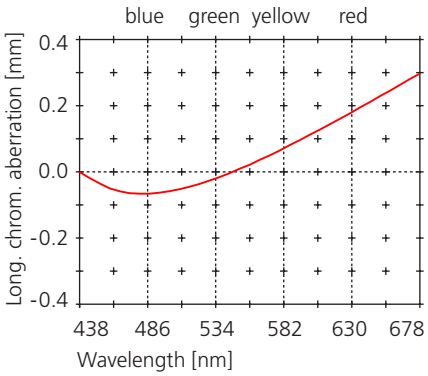
Fall-off in illumination Scale 0.05x



Distortion Scale 0.03x ... 0.2x



Long. chrom. aberration Scale 0.05x



All spatial frequencies [line pairs/mm], image heights [mm] and scales are related to the film or sensor side

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Accessories: Center filters
Accessories: Focus-Mount

Lenses for Analog Professional Photography

Apo-Sironar-S

The Apo-Sironar-S is a lens for universal use which has been modified to provide the highest image reproduction quality. Like the Apo-Sironar-N, its applications are almost unlimited. Its special strengths can be seen when complex, fine structures in the outer part of the image circle have to be reproduced.

Its field angle has been increased to 75° and so permits even more generous shifts. Therefore, the Apo-Sironar-S is also the ideal standard lens for applications which require particularly large parallel shifts to correct the perspective. For instance, the Apo-Sironar-S 150 mm f/5.6 permits up to 10 mm more lateral or vertical shift than the equivalent Apo-Sironar-N lens.

As a result of the elimination of the secondary spectrum thanks to the use of ED glass materials with anomalous dispersion (ED = extra low dispersion), no visible color fringing occurs even at edges with extreme contrast. In addition, the light fall-off towards the image corners (vignetting) has been reduced for a more uniform illumination.

Thanks to this high optical performance in the edges of the field, the six-element Apo-Sironar-S can be used with f-stop 16 as its working aperture – a special advantage for outdoor shots due to the shorter exposure time this allows.

Apo-Sironar-S	Max. recommended film format
100 mm f/5.6	6×9 cm
135 mm f/5.6	9×12 cm / 4×5 in.
150 mm f/5.6	9×12 cm / 4×5 in.
180 mm f/5.6	13×18 cm / 5×7 in.
210 mm f/5.6	13×18 cm / 5×7 in.
240 mm f/5.6	13×18 cm / 5×7 in.
300 mm f/5.6	18×24 cm / 8×10 in.
360 mm f/6.8	18×24 cm / 8×10 in.

Data sheets

Formats, dimensions, shutter data, image circles, movement ranges

Performance data

Apo-Sironar-S: the ultimate large format lens with extensive adjustment reserves

Apo-Sironar-S

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Formats, shutter sizes, dimensions, weight

Lens	Max. recommended film format	Shutter size	Push-on mount Ø	Filter thread	Rear barrel Ø	Flange focal length [1]	Overall length	Weight w/Copal
100 mm f/5.6	6×9 cm	0	51 mm	M 49 × 0.75	31.5 mm	99.0 mm	42.6 mm	190 g
135 mm f/5.6	9×12 cm / 4×5 in.	0	51 mm	M 49 × 0.75	48.0 mm	132.0 mm	47.5 mm	240 g
150 mm f/5.6	9×12 cm / 4×5 in.	0	51 mm	M 49 × 0.75	51.0 mm	147.0 mm	51.5 mm	250 g
180 mm f/5.6	13×18 cm / 5×7 in.	1	70 mm	M 67 × 0.75	60.0 mm	177.0 mm	60.5 mm	410 g
210 mm f/5.6	13×18 cm / 5×7 in.	1	75 mm	M 72 × 0.75	65.0 mm	202.0 mm	69.5 mm	490 g
240 mm f/5.6	13×18 cm / 5×7 in.	3	90 mm	M 86 × 1	80.0 mm	230.0 mm	82.0 mm	980 g
300 mm f/5.6	18×24 cm / 8×10 in.	3	105 mm	M 100 × 1	80.0 mm	277.0 mm	98.5 mm	1210 g
360 mm f/6.8	18×24 cm / 8×10 in.	3	117 mm	M 112 × 1.5	80.0 mm	330.0 mm	120.0 mm	1560 g

[1] With Copal shutter for scale 1:∞

Shutter data

Shutter type and size	Shutter speeds range	Manual cocking	Self cocking	Mechanical	Electronic	x-synchronized	Smallest f-stop increments	Screw thread	Lens board opening	Lens board thickness	Accessories required
Copal 0	B, T, 1/500 s … 1 s	•		•		•		M 32.5 × 0.5	34.8 mm	1.5 … 4.0 mm	
Copal 1	B, T, 1/400 s … 1 s	•		•		•		M 39 × 0.75	41.8 mm	1.5 … 3.0 mm	
Copal 3	B, 1/125 s … 1 s	•		•		•		M 62 × 0.75	65.3 mm	1.5 … 5.0 mm	
Copal Press 0	B, 1/125 s … 1 s		•	•		•		M 32.5 × 0.5	34.8 mm	1.5 … 3.0 mm	
Copal Press 1	B, 1/125 s … 1 s		•	•		•		M 39 × 0.75	41.8 mm	1.5 … 2.0 mm	
Rollei Electron. 0	B, 1/500 s … 30 s				•	•	1/10	M 39 × 0.75	41.8 mm	1.5 … 3.0 mm	Control Unit
Rollei Electron. 1	B, 1/300 s … 30 s				•	•	1/10	M 39 × 0.75	41.8 mm	1.5 … 3.0 mm	Control Unit

Working apertures, image angles, image circles and movement ranges

Lens	Image scale	Working f-stop	Image angle	Image circle diameter	Movement range [mm] [2] vertical/horizontal (landscape format) 6×7 cm	6×9 cm	6×12 cm	4×5 in.	5×7 in.	8×10 in.
100 mm f/5.6	1:∞	11-22	75°	155 mm	41 / 38	36 / 28	24 / 13	1 / 1		
135 mm f/5.6	1:∞	11-22	75°	208 mm	77 / 66	66 / 56	59 / 43	37 / 32		
150 mm f/5.6	1:∞	11-22	75°	231 mm	82 / 78	79 / 68	72 / 55	51 / 45	17 / 13	
180 mm f/5.6	1:∞	16-32	75°	276 mm	105 / 101	103 / 91	98 / 78	76 / 69	48 / 39	
210 mm f/5.6	1:∞	16-32	75°	316 mm	126 / 121	124 / 112	119 / 98	98 / 90	73 / 61	3 / 2
240 mm f/5.6	1:∞	16-32	75°	372 mm	155 / 150	153 / 140	149 / 127	128 / 120	105 / 91	43 / 36
300 mm f/5.6	1:∞	22-45	75°	448 mm	193 / 188	192 / 179	189 / 165	168 / 159	147 / 131	90 / 79
360 mm f/6.8	1:∞	22-45	68°	468 mm	203 / 198	202 / 188	199 / 175	178 / 169	157 / 141	102 / 90

[2] These values apply to the recommended working aperture at the given scale; with increasing scale, image circle and movement ranges increase

Apo-Sironar-S 150 mm f/5.6

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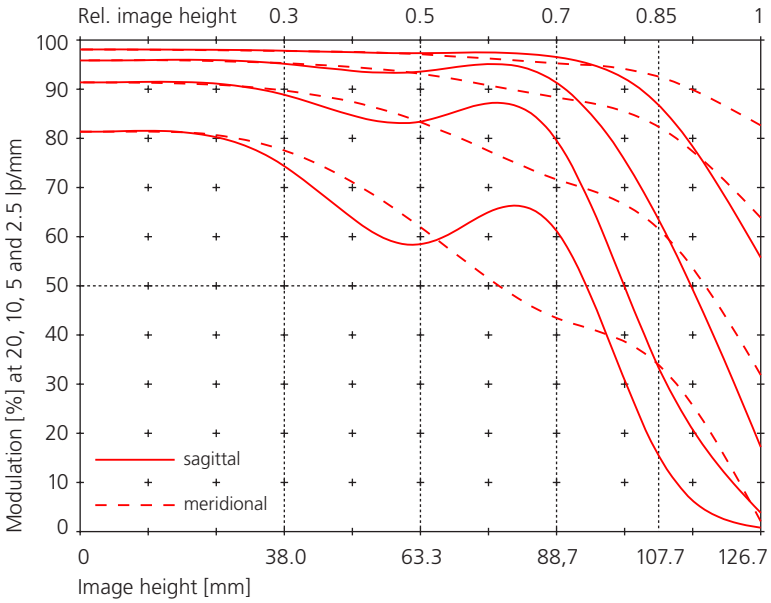
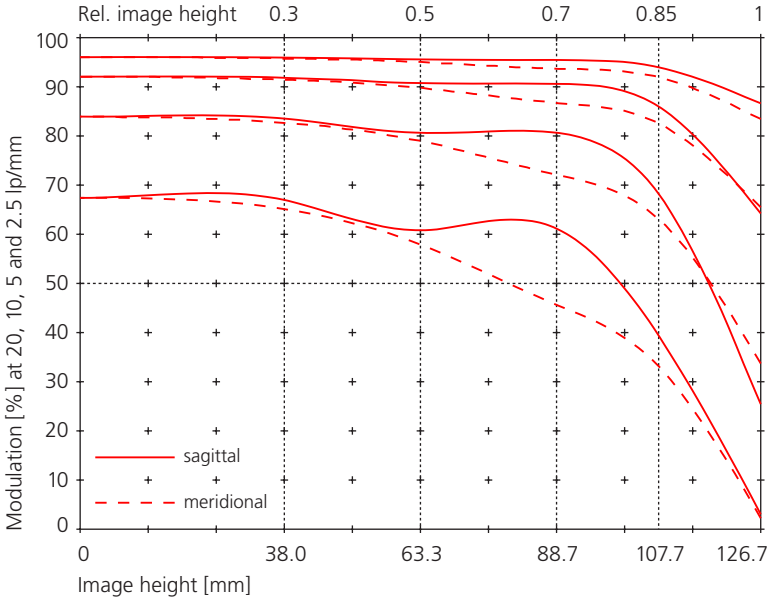
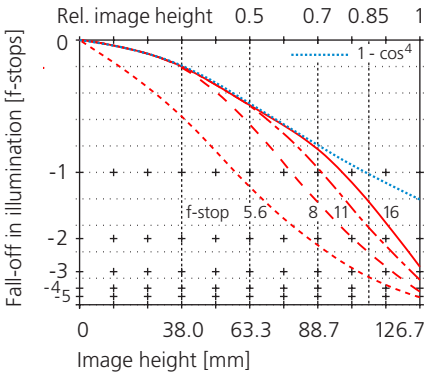
Modulation transfer function Scale 0.1x f-stop 11



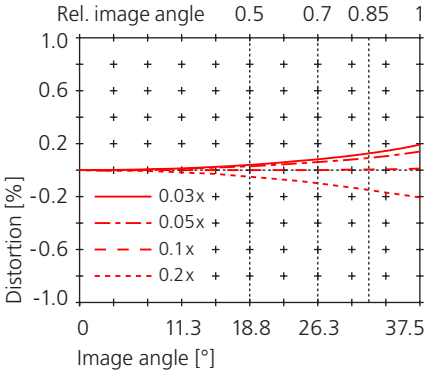
Modulation transfer function Scale 0.1x f-stop 22



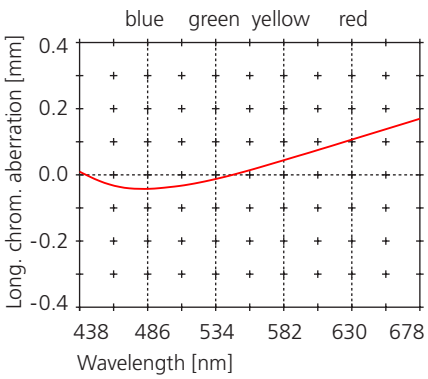
Fall-off in illumination Scale 0.1x



Distortion Scale 0.03x ... 0.2x



Long. chrom. aberration Scale 0.1x



All spatial frequencies [line pairs/mm], image heights [mm] and scales are related to the film or sensor side

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Accessories: Center filters
Accessories: Focus-Mount

Lenses for Analog Professional Photography

Apo-Macro-Sironar

In the near area, at scales of around 1:1, the quality of lenses optimized for larger distances falls visibly from the usual standard of performance. Here the Apo-Macro-Sironar-N lenses come into their own for imaging scales of 1:5 and greater.

Incidentally, imaging scales of 1:5 or larger are required even in conventional table-top photography or studio photography (e.g. pack shots): for example, 1:3 at a film size of 13×18 cm means the full format image reproduction of an object of approximately 40×50 cm in size.

The Apo-Macro-Sironar offers excellent imaging quality in conjunction with the wide freedom of movement required for perfect perspective corrections of large-format photography.

The Apo-Macro-Sironar provides exceptional results without any color fringes at a scale range from 1:5 to 2:1 without any need to adjust the lens individually. The focal lengths of 120 and 180 mm allow work with most cameras without any extra monorail extension even at a scale of 2:1.

Apo-Macro-Sironar	Max. recommended film format
120 mm f/5.6	9×12 cm / 4×5 in.
180 mm f/5.6	13×18 cm / 5×7 in.

Data sheets

Formats, dimensions, shutter data, image circles, movement ranges

Performance data

Apo-Macro-Sironar: the best large format lens to make little things look great

Apo-Macro-Sironar

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Formats, shutter sizes, dimensions, weight

Lens	Max. recommended film format	Shutter size	Push-on mount Ø	Filter thread	Rear barrel Ø	Flange focal length [1]	Overall length	Weight w/Copal
120 mm f/5.6	9×12 cm / 4×5 in.	0	51 mm	M 49 × 0.75	40.5 mm	235.6 mm	43.8 mm	220 g
180 mm f/5.6	13×18 cm / 5×7 in.	1	70 mm	M 67 × 0.75	54.0 mm	356.6 mm	61.2 mm	410 g

[1]) With Copal shutter for scale 1:∞

Shutter data

Shutter type and size	Shutter speeds range	Manual cocking	Self cocking	Mechanical	Electronic	x-synchronized	Smallest f-stop increments	Screw thread	Lens board opening	Lens board thickness	Accessories required
Copal 0	B, T, 1/500 s … 1 s	•		•		•		M 32.5 × 0.5	34.8 mm	1.5 … 4.0 mm	
Copal 1	B, T, 1/400 s … 1 s	•		•		•		M 39 × 0.75	41.8 mm	1.5 … 3.0 mm	
Copal Press 0	B, 1/125 s … 1 s		•	•		•		M 32.5 × 0.5	34.8 mm	1.5 … 3.0 mm	
Copal Press 1	B, 1/125 s … 1 s		•	•		•		M 39 × 0.75	41.8 mm	1.5 … 2.0 mm	
Rollei Electron. 0	B, 1/500 s … 30 s				•	•	1/10	M 39 × 0.75	41.8 mm	1.5 … 3.0 mm	Control Unit
Rollei Electron. 1	B, 1/300 s … 30 s				•	•	1/10	M 39 × 0.75	41.8 mm	1.5 … 3.0 mm	Control Unit

Working apertures, image angles, image circles and movement ranges

Lens	Image scale	Working f-stop	Image angle	Image circle diameter	Movement range [mm] [2]) vertical/horizontal (landscape format) 6×7 cm	6×9 cm	6×12 cm	4×5 in.	5×7 in.	8×10 in.
120 mm f/5.6	1:5	8-11	70°	201 mm	66 / 62	62 / 52	55 / 39	33 / 28		
	1:1	8-11	60°	277 mm	106 / 101	103 / 92	98 / 79	77 / 70	49 / 39	
	2:1	8-11	55°	374 mm	156 / 151	154 / 141	150 / 128	129 / 121	106 / 92	44 / 37
180 mm f/5.6	1:5	16-22	70°	302 mm	119 / 114	116 / 104	112 / 91	90 / 83	64 / 53	
	1:1	16-22	60°	415 mm	177 / 171	174 / 161	171 / 148	150 / 142	129 / 113	70 / 61
	2:1	16-22	55°	562 mm	251 / 245	249 / 235	247 / 222	226 / 217	207 / 189	156 / 141

[2]) These values apply to the recommended working aperture at the given scale; with increasing scale, image circle and movement ranges increase

Apo-Macro-Sironar 120 mm f/5.6

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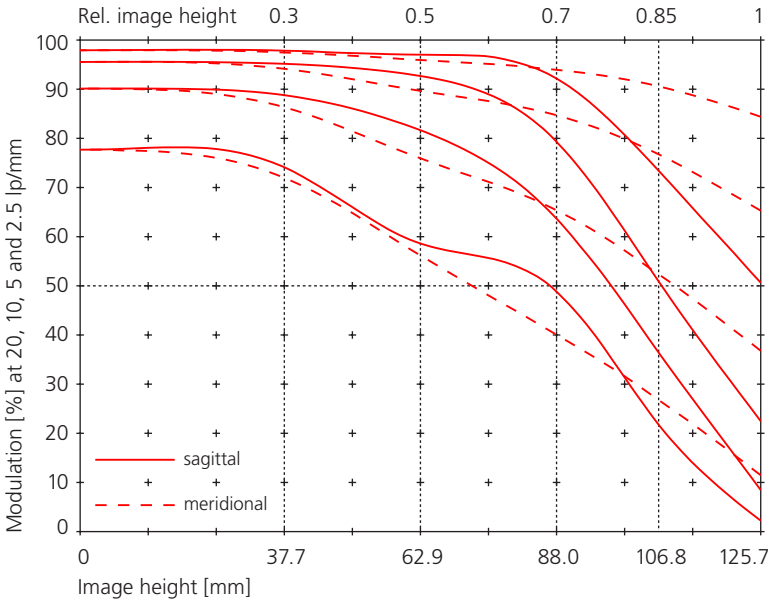
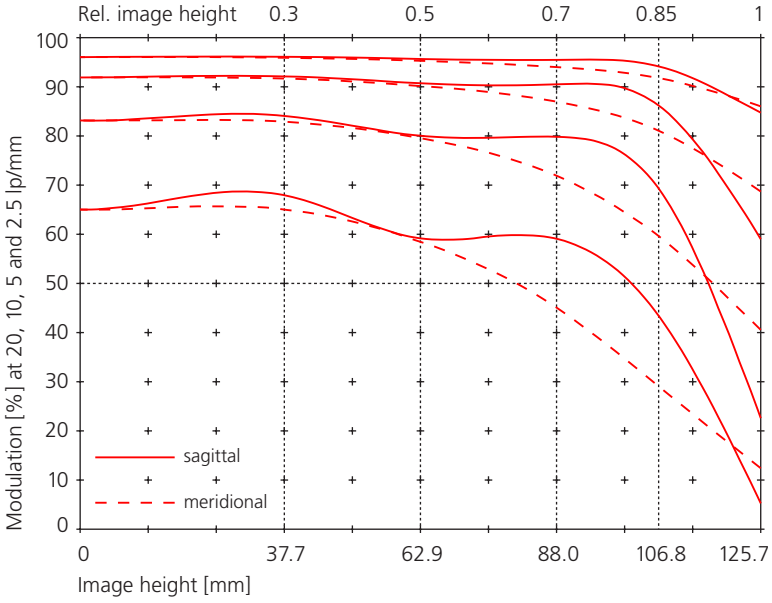
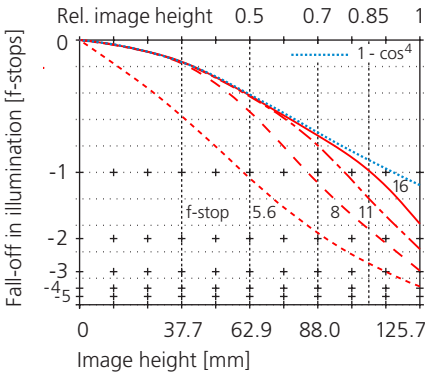
Modulation transfer function Scale 0.5x f-stop 8



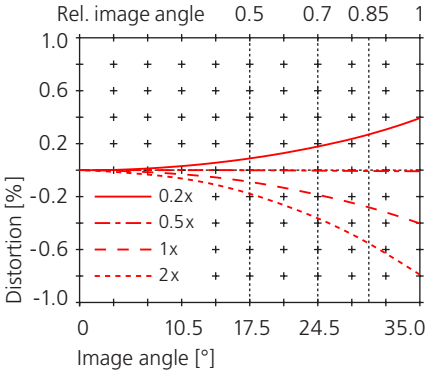
Modulation transfer function Scale 0.5x f-stop 16



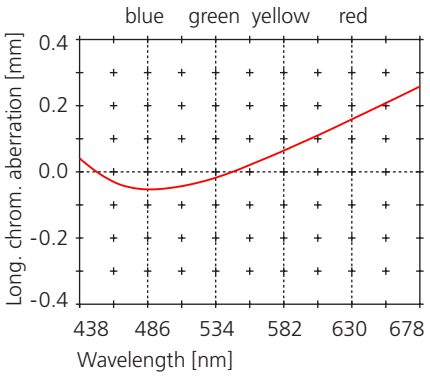
Fall-off in illumination Scale 0.5x



Distortion Scale 0.2x ... 2x



Long. chrom. aberration Scale 0.5x



All spatial frequencies [line pairs/mm], image heights [mm] and scales are related to the film or sensor side

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Grandagon-N

Accessories: Center filters
Accessories: Focus-Mount

Lenses for Analog Professional Photography

Apo-Grandagon

When large format cameras are used with roll film backs, they require shorter focal length lenses. With the focal lengths of 35, 45 and 55 mm of the Apo-Grandaon lenses, photography in close spaces or panoramic views in landscape photography becomes an effortless "dynamic enjoyment".

The Apo-Grandagon ultra-wide angle lenses give you the freedom to find new and appealing views in product photography. But new standards in freedom of movement are also offered by these outstanding lenses with a useful field angle of 120° in architectural and industrial photography. The Apo-Grandagon 55 mm f/4.5 even allows photographs of, for example, wide open spaces on 4×5" sheet film which is most popular in demanding landscape photography.

New glass combinations (ED glasses) make possible apochromatic correction of ultra-wide angle lenses for the first time. This ensures there will be no color fringes even on high contrast building silhouettes against bright sky. With values of less than 0.5 %, distortion can be neglected.

The high maximum aperture makes adjustment easy. A large working aperture of 8-11 allows advantageous, shorter exposure times for outdoor motifs (with moving objects) or a lower flash power in the studio. For uniformly illuminated pictures without light fall-off according to the "$\cos^4$ law", the use of the color-neutral Rodenstock center filters is recommended.

With the Rodenstock Focus-Mount, these lenses can be fitted to panoramic or shift cameras without bellows.

For checking the adaptation to different large format camera models, we can provide you with special tables and instructions on request.

Apo-Grandagon	Max. recommended film format
35 mm f/4.5	6×9 cm
45 mm f/4.5	6×12 cm
55 mm f/4.5	9×12 cm / 4×5 in.

Data sheets

Formats, dimensions, shutter data, image circles, movement ranges

Performance data

Apo-Grandagon: freedom for architecture, landscape and studio

Apo-Grandagon

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Formats, shutter sizes, dimensions, weight

Lens	Max. recommended film format	Shutter size	Push-on mount Ø	Filter thread	Rear barrel Ø	Flange focal length [1]	Overall length	Weight w/Copal
35 mm f/4.5	6×9 cm	0	70 mm	M 67 × 0.75	60.0 mm	43.2 mm	55.7 mm	300 g
45 mm f/4.5	6×12 cm	0	70 mm	M 67 × 0.75	60.0 mm	55.5 mm	65.3 mm	350 g
55 mm f/4.5	9×12 cm / 4×5 in.	0	70 mm	M 67 × 0.75	60.0 mm	67.6 mm	69.8 mm	400 g

[1]) With Copal shutter for scale 1:∞

Shutter data

Shutter type and size	Shutter speeds range	Manual cocking	Self cocking	Mechanical	Electronic	x-synchronized	Smallest f-stop increments	Screw thread	Lens board opening	Lens board thickness	Accessories required
Copal 0	B, T, 1/500 s … 1 s	•		•		•		M 32.5 × 0.5	34.8 mm	1.5 … 4.0 mm	
Copal Press 0	B, 1/125 s … 1 s		•	•		•		M 32.5 × 0.5	34.8 mm	1.5 … 3.0 mm	
Rollei Electron. 0	B, 1/500 s … 30 s				•	•	1/10	M 39 × 0.75	41.8 mm	1.5 … 3.0 mm	Control Unit

Working apertures, image angles, image circles and movement ranges

Lens	Image scale	Working f-stop	Image angle	Image circle diameter	Movement range [mm] [2]) vertical/horizontal (landscape format) 6×7 cm	6×9 cm	6×12 cm	4×5 in.	5×7 in.	8×10 in.
35 mm f/4.5	1:∞	8-11	120°	125 mm	24 / 22	16 / 12				
45 mm f/4.5	1:∞	8-11	110°	131 mm	28 / 25	20 / 15	4 / 2			
55 mm f/4.5	1:∞	8-11	110°	163 mm	46 / 42	40 / 32	30 / 19	7 / 6		

[2]) These values apply to the recommended working aperture at the given scale; with increasing scale, image circle and movement ranges increase

Apo-Grandagon 45 mm f/4.5

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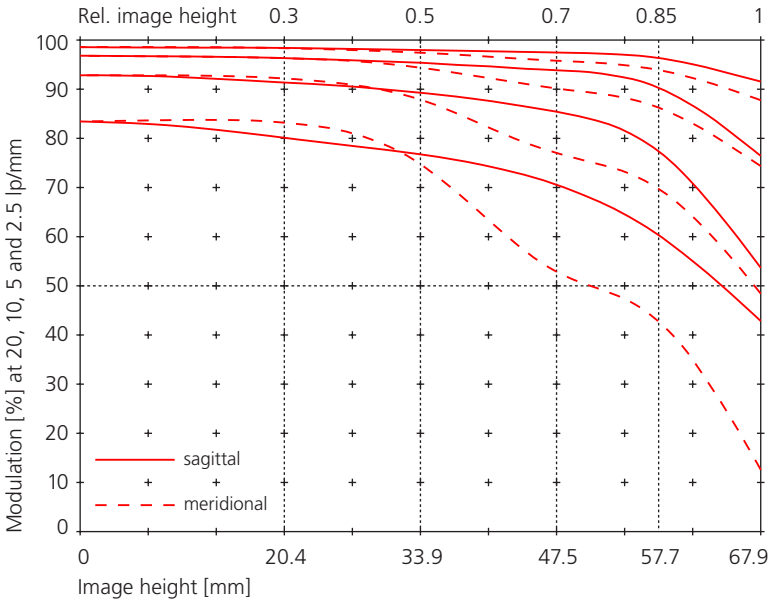
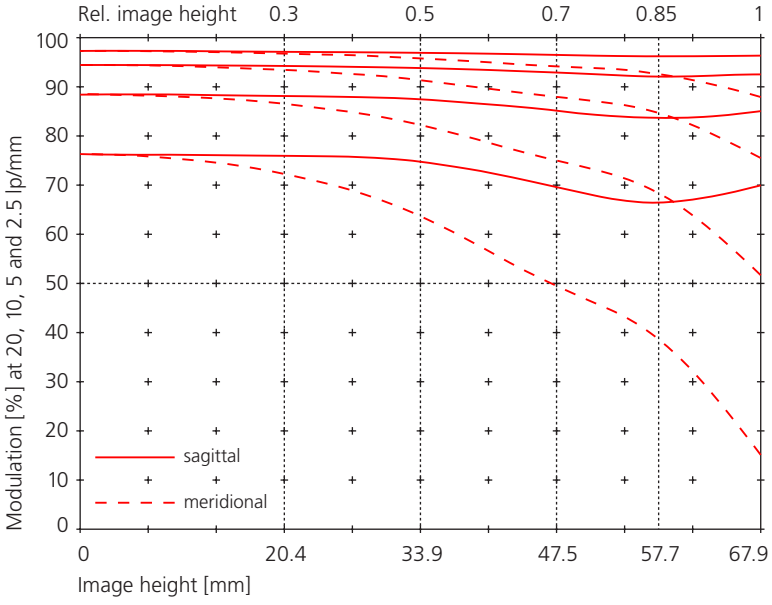
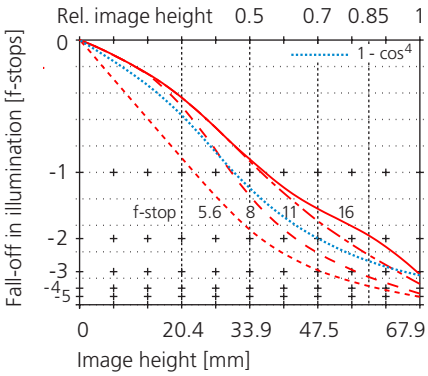
Modulation transfer function Scale 0.03x f-stop 8



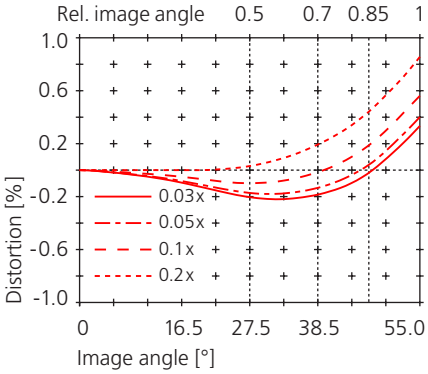
Modulation transfer function Scale 0.03x f-stop 16



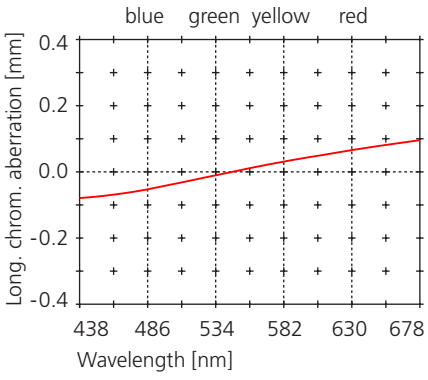
Fall-off in illumination Scale 0.03x



Distortion Scale 0.03x ... 0.2x



Long. chrom. aberration Scale 0.03x



All spatial frequencies [line pairs/mm], image heights [mm] and scales are related to the film or sensor side

Back to lens overview

Apo-Sironar-N
Apo-Sironar-S
Apo-Macro-Sironar
Apo-Grandagon
Grandagon-N

Accessories: Center filters
Accessories: Focus-Mount

Lenses for Analog Professional Photography

Grandagon-N

The Grandagon-N with its wide field angle of up to 105° can really display its strengths in wide photos in close conditions, e.g. in architecture or industrial photos or in panoramic views.

With the Grandagon-N, all the problems which occur in connection with large field angles have been ideally taken care of: The distortion has been reduced to a small residual value; the light fall-off at the edge has been greatly reduced thanks to an optical trick ("pupil distortion" = the entrance pupil diameter increases when viewing at an angle); the sharpness sets standards for this class of lens.

The Grandagon-N is available in two versions: With the maximum aperture 4.5 in focal lengths 65 to 90 mm it has 8 elements in 4 groups, and with the maximum aperture 6.8 in the focal length 90 mm it has 6 elements in 4 groups.

The eight element lenses offer not only a high maximum aperture, but also a field angle of 105°, an even more uniform illumination and distortion values of less than 1%. The six element lens is the cost-effective alternative that also impresses by its compactness which even allows the insertion into the Focus-Mount helical focuser for the use with bellowless panoramic or shift cameras.

The use of the neutral gray Rodenstock center filters is recommended for critical motifs to make best use of the image circle without irritating light fall-off to the image corners.

Grandagon-N	Max. recommended film format
65 mm f/4.5	9×12 cm / 4×5 in.
75 mm f/4.5	9×12 cm / 4×5 in.
90 mm f/4.5	13×18 cm / 5×7 in.
90 mm f/6.8	9×12 cm / 4×5 in.

Data sheets

Formats, dimensions, shutter data, image circles, movement ranges

Performance data 1

Performance data 2

Grandagon-N: the "space expander" for situations where space is limited

Grandagon-N

Back to lens description

Formats, shutter sizes, dimensions, weight

Lens	Max. recommended film format	Shutter size	Push-on mount Ø	Filter thread	Rear barrel Ø	Flange focal length [1]	Overall length	Weight w/Copal
65 mm f/4.5	9×12 cm / 4×5 in.	0	60 mm	M 58 × 0.75	51.0 mm	70.0 mm	63.5 mm	330 g
75 mm f/4.5	9×12 cm / 4×5 in.	0	70 mm	M 67 × 0.75	60.0 mm	82.0 mm	73.5 mm	440 g
90 mm f/4.5	13×18 cm / 5×7 in.	1	85 mm	M 82 × 0.75	70.0 mm	98.0 mm	88.5 mm	700 g
90 mm f/6.8	9×12 cm / 4×5 in.	0	70 mm	M 67 × 0.75	60.0 mm	94.0 mm	78.5 mm	460 g

[1]) With Copal shutter for scale 1:∞

Shutter data

Shutter type and size	Shutter speeds range	Manual cocking	Self cocking	Mechanical	Electronic	x-synchronized	Smallest f-stop increments	Screw thread	Lens board opening	Lens board thickness	Accessories required
Copal 0	B, T, 1/500 s … 1 s	•		•		•		M 32.5 × 0.5	34.8 mm	1.5 … 4.0 mm	
Copal 1	B, T, 1/400 s … 1 s	•		•		•		M 39 × 0.75	41.8 mm	1.5 … 3.0 mm	
Copal Press 0	B, 1/125 s … 1 s		•	•		•		M 32.5 × 0.5	34.8 mm	1.5 … 3.0 mm	
Copal Press 1	B, 1/125 s … 1 s		•	•		•		M 39 × 0.75	41.8 mm	1.5 … 2.0 mm	
Rollei Electron. 0	B, 1/500 s … 30 s				•	•	1/10	M 39 × 0.75	41.8 mm	1.5 … 3.0 mm	Control Unit
Rollei Electron. 1	B, 1/300 s … 30 s				•	•	1/10	M 39 × 0.75	41.8 mm	1.5 … 3.0 mm	Control Unit

Working apertures, image angles, image circles and movement ranges

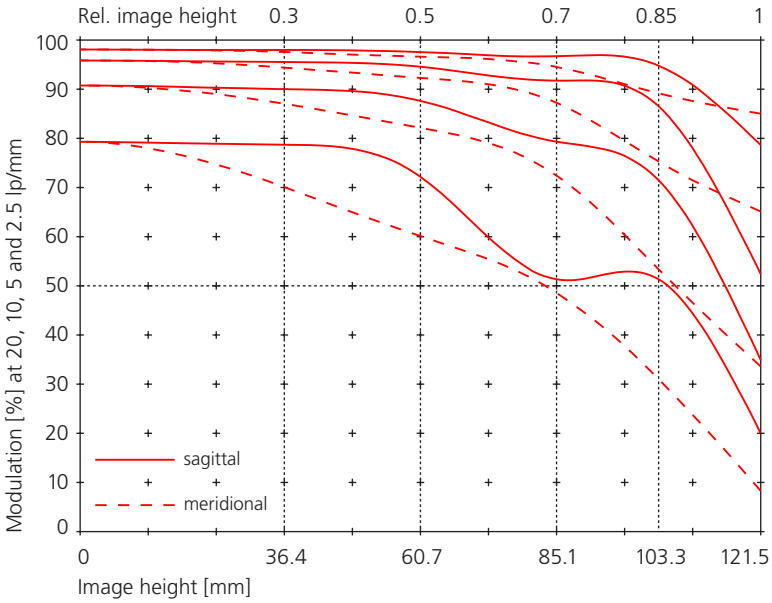
Lens	Image scale	Working f-stop	Image angle	Image circle diameter	Movement range [mm] [2]) vertical/horizontal (landscape format) 6×7 cm	6×9 cm	6×12 cm	4×5 in.	5×7 in.	8×10 in.
65 mm f/4.5	1:∞	16-22	105°	170 mm	50 / 46	46 / 36	35 / 23	12 / 10		
75 mm f/4.5	1:∞	16-22	105°	195 mm	63 / 59	59 / 49	51 / 36			
90 mm f/4.5	1:∞	16-22	105°	236 mm	85 / 80	81 / 70	75 / 58	54 / 48	21 / 16	
90 mm f/6.8	1:∞	22-32	102°	221 mm	77 / 73	73 / 63	67 / 50	45 / 39	10 / 7	

[2]) These values apply to the recommended working aperture at the given scale; with increasing scale, image circle and movement ranges increase

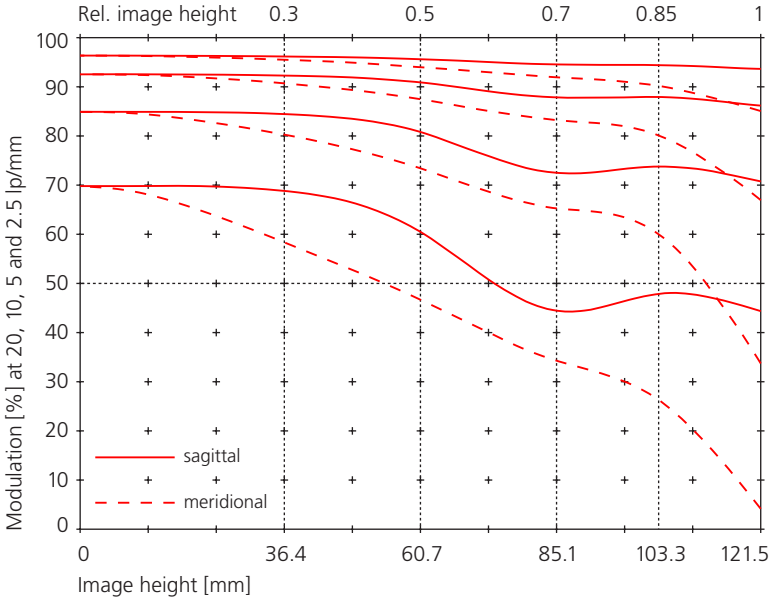
Grandagon-N 90 mm f/4.5

Back to lens description

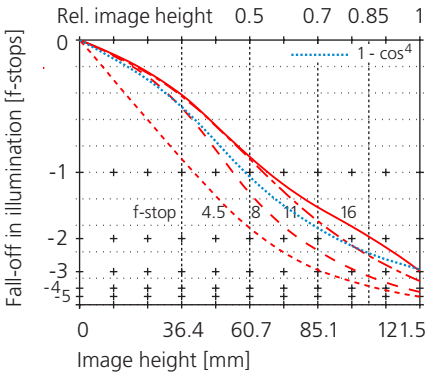
Modulation transfer function **Scale 0.03x** **f-stop 11**



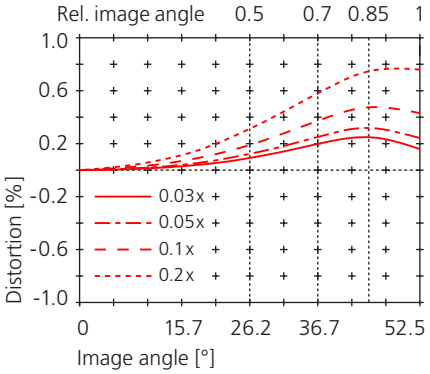
Modulation transfer function **Scale 0.03x** **f-stop 22**



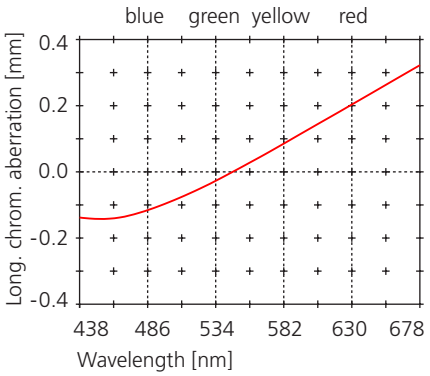
Fall-off in illumination **Scale 0.03x**



Distortion **Scale 0.03x ... 0.2x**



Long. chrom. aberration **Scale 0.03x**

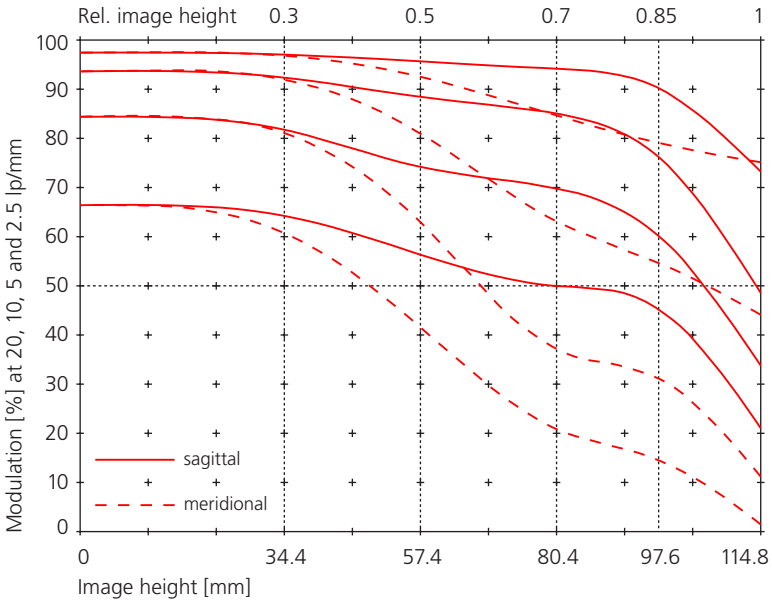


All spatial frequencies [line pairs/mm], image heights [mm] and scales are related to the film or sensor side

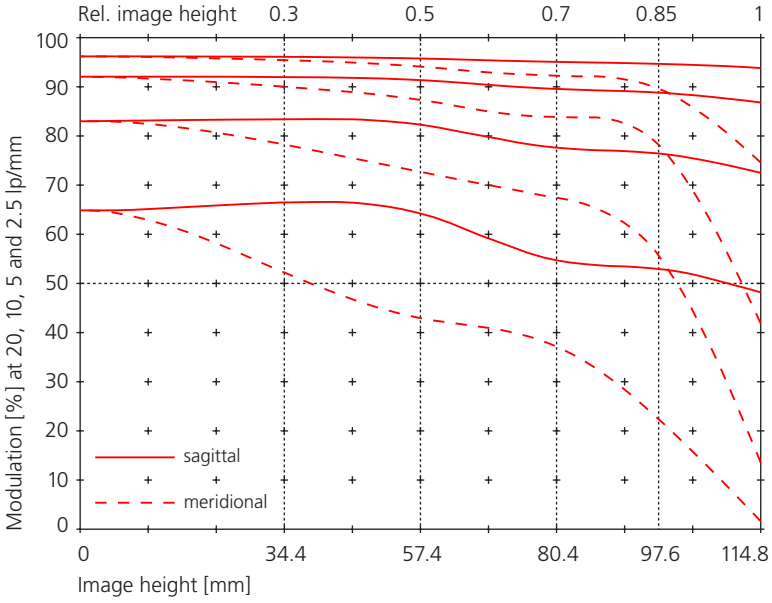
Grandagon-N 90 mm f/6.8

Back to lens description

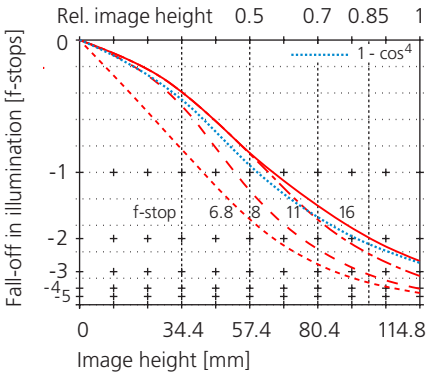
Modulation transfer function Scale 0.03x f-stop 11



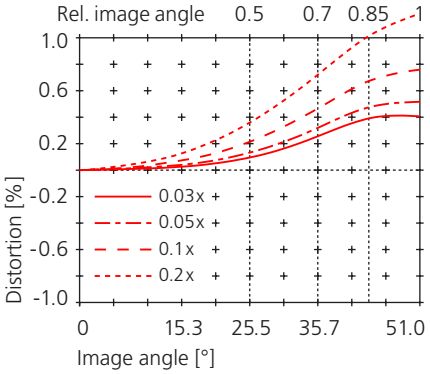
Modulation transfer function Scale 0.03x f-stop 22



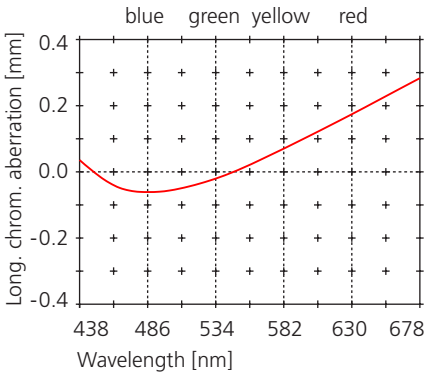
Fall-off in illumination Scale 0.03x



Distortion Scale 0.03x ... 0.2x



Long. chrom. aberration Scale 0.03x



All spatial frequencies [line pairs/mm], image heights [mm] and scales are related to the film or sensor side

Back to lens overview

Apo-Sironar-N
Apo-Sironar-S
Apo-Macro-Sironar
Apo-Grandagon
Grandagon-N

Accessories: Center filters
Accessories: Focus-Mount

Lenses for Analog Professional Photography

Accessories: Center filters

For critical shots (e.g. with areas of uniform brightness towards the image corners) the physically inevitable light fall-off according to the "$\cos^4$ law" can be eliminated by using the neutral gray Rodenstock center filters available for all Apo-Grandagon and Grandagon-N lenses (see table). A center filter should always be used if the image circle of a wide angle lens is used right up to the vicinity of the circumference.

Rodenstock center filters are concentric graduated neutral gray filters whose density decreases from the center up to the transparent rim. The fall in density compensates for practically all the light fall-off to the image edge from a working f-stop of 16. The exposure must be corrected by 1.5 or 2.5 stops. This corresponds to a correction of the exposure time by a factor of 3 or 5 respectively (either aperture or exposure time have to be corrected, not both at the same time).

Apo-Grandagon & Grandagon-N	Filter thread	Exp. correction f-stops	/ time
35 mm f/4.5	E 67/86	+2.5	5×
45 mm f/4.5	E 67/86	+2.5	5×
55 mm f/4.5	E 67/86	+2.5	5×
65 mm f/4.5	E 58/77	+1.5	3×
75 mm f/6.8	E 58/77	+1.5	3×
75 mm f/4.5	E 67/86	+1.5	3×
90 mm f/6.8	E 67/86	+1.5	3×
90 mm f/4.5	E 82/112	+1.5	3×
115 mm f/6.8 *	E 82/112	+1.5	3×

* This lens is no longer produced; however, the matching center filter is still available for later completion

Centerfilter: for even illumination with ultra-wide angle large format lenses

Back to lens overview

Apo-Sironar-N
Apo-Sironar-S
Apo-Macro-Sironar
Apo-Grandagon
Grandagon-N

Accessories: Center filters
Accessories: Focus-Mount

Lenses for Analog Professional Photography

Accessories: Focus-Mount

Using large format lenses on cameras without bellows such as panoramic or shift cameras requires the use of a focusing facility. The Focus-Mount can be combined with all Rodenstock lenses in shutter size 0.

Existing lenses can be installed at a later date.

The Focus-Mount ensures precise focusing and the non-rotating lens mount means that all operating elements and scales of the shutter remain in the same position for best reading and handling. The lenses which can be used as well as their focusing ranges can be found in the table.

More information on applications and adaption are available on request for the case that the manufacturer of your camera cannot help you.

Lens		Focusing range
Apo-Grandagon	35 mm f/4.5	∞ – 0.4 m / 1.5 ft
	45 mm f/4.5	∞ – 0.6 m / 2.0 ft
	55 mm f/4.5	∞ – 0.9 m / 3.0 ft
Grandagon-N	65 mm f/4.5	∞ – 0.8 m / 2.5 ft
	75 mm f/4.5	∞ – 1.0 m / 3.5 ft
	90 mm f/6.8	∞ – 1.3 m / 5.0 ft
Apo-Sironar-S	100 mm f/5.6	∞ – 1.8 m / 6.0 ft
	135 mm f/5.6	∞ – 3.0 m / 10 ft
	150 mm f/5.6	∞ – 3.5 m / 12 ft
Apo-Sironar-N	150 mm f/5.6	∞ – 3.5 m / 12 ft

Focus-Mount: makes it possible to use excellent Rodenstock lenses with shift and panoramic cameras